

Abstract Submitted  
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**Nuclear-Electronic Coherence in Strong-Field Dissociative Ionization**<sup>1</sup> YOU LIANG YU, YU JUN WANG, SHUO ZENG, B.D. ESRY, J. R. Macdonald Laboratory, Kansas State University — In strong-field dissociative ionization of molecules, the ionization step is usually modeled since direct calculation is very challenging. In most of the models used to date, ionization is assumed to occur at several well-defined times accompanied by promotion of a nuclear wave packet to the ionic Born-Oppenheimer potential. Whether these nuclear wave packets should add coherently or incoherently in general is an open question. To answer it, we solve the time-dependent Schrödinger equation for one-dimensional  $H_2^+$ , where ionization is included naturally, and compare the observables, such as the kinetic energy release spectrum, with those from an ionization model. We then examine the validity of such models in strong-field dissociative ionization of  $H_2^+$  with reduced dimensionality. We do not, however, expect this physics to depend sensitively on the dimensionality.

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